

NATIONAL INSTITUTE OF R&D FOR PHYSICS AND NUCLEAR ENGINEERING  
"HORIA HULUBEI"

Radioactive Waste Management Department

# THE ROMANIAN NATIONAL REPOSITORY FOR RADIOACTIVE WASTE, BAITA, BIHOR COUNTY (DNR)

Felicia Dragolici

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- 1985 - National Repository for Low and Intermediate Radioactive Waste (DNR) - Baita, Bihor county, sited in Apuseni mountains, in an old exhausted uranium mine.
- 21,000 standard drums (220 l). In present, in the DNR galleries are finally disposed more than 6,000 standard drums.
- rock meet in galleries are characterized by low porosity and humidity, which practically means that are dry and compact.
- Thus, their natural stability leads that for almost 25 years from excavation, with small exceptions, the galleries maintain the initial profiles.
- A weak local seismicity and by a higher seismicity activity induced by the Vrancea epicentral area (700 km far).
- The main water leakage results from precipitations.
- The hydrogeologic prospective performed underground as well as the chemical analyze of the water conducted to the result that groundwater does not origin from underground springs.

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- In present, in the DNDR galleries are finally disposed more than 6,000 standard drums.
- The main types of rock meet in galleries are characterized by low porosity and humidity, which practically means that are dry and compact.
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- Hence the rainfall and melted snows infiltration water (through fractures) are the single sources of groundwater.
- The Avram Iancu uranium deposit (which include galleries 50 and 53) is found by Russians in 1952 using gamma prospecting, being considered one of the most important uranium deposits from Romania.
- In time, the activity was diminished and now the exploitation is almost shut down.
- The repository area is totally exhausted with no economic potential and is planned to start a reecologisation and restoration project in the whole area.

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- The planning was carried out taking in consideration the total length of the galleries and the annually deposited drums, obtaining an optimum profile of 10,5 m<sup>2</sup>.
- In the technological disposal process is used bentonite, wood and cement brick. Bentonite is used as backfilling material and engineered barrier.
- When a gallery is filled up, is tight with cement bricks.

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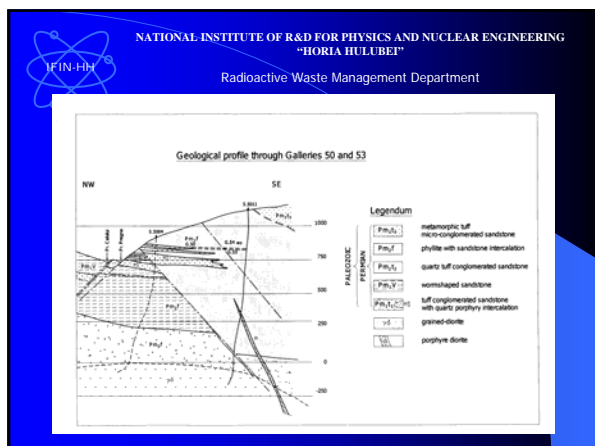
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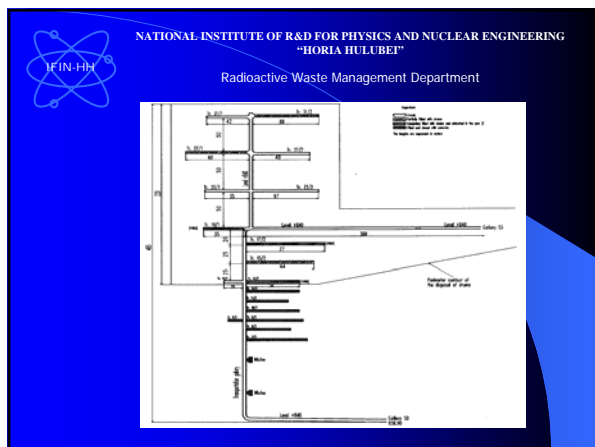
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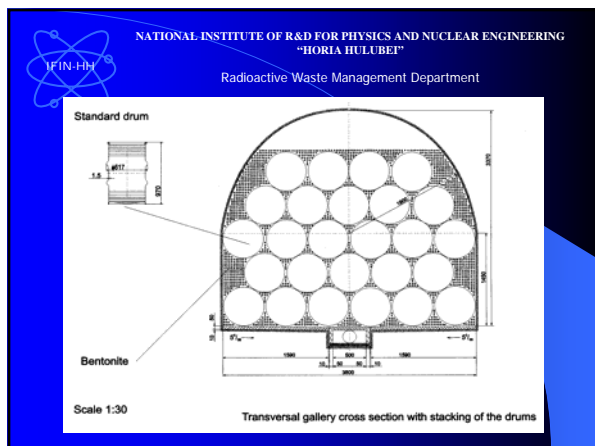
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**Licensing of disposal operations at Raita Bihor**

- National Commission for Nuclear Activities Control (CNCAN) is the regulatory and licensing body with responsibility for nuclear safety, radiation protection, decommissioning and radioactive waste management.
- From 1996 to 2002, the Raita Bihor repository has been granted temporary and renewable licences for one year at a time. This licence was actually based on older authorisations, which were quite restrictive in terms of specific activity limits for waste packages as well as for the total inventory of radionuclides that can be accepted by the disposal facility.
- It is worth noting that these limits were based on very rough safety assessment. Therefore in the late nineties, CNCAN was interested in performing a safety case for the site that could at least justify the limits defined earlier and if possible make them more flexible with respect to a number of key radionuclides.
- Future funded study entitled "Preparatory measures for the long-term safety assessment of the low-level radioactive waste repository Raita Bihor".
- Based on the results of that study, CNCAN has just granted a new licence to IFIN-HH for the operation of the Raita Bihor repository up to 2005. The new licence enables the disposal of waste packages with higher specific activities for  $^{90}\text{Sr}$ ,  $^{137}\text{Cs}$ ,  $^{134}\text{Cs}$  and  $^{137}\text{Ba}$ .
- By that time, IFIN-HH will have to prepare a Preliminary Safety Assessment Report (PSAR) within the framework of a new Phase project programmed in 2002.
- The 2003 Phase project, will address the two main issues facing the operation of the Raita Bihor repository, i.e. upgrading of the facility according to the best practices in the EU and completion of the PSAR in order to get a licence from CNCAN.
- In 2002, the Ministry of Education and Research from which depends the IFIN-HH Institute decided to fund the decommissioning activities of the VVR-S research reactor. This decision will result in the next generation of radioactive waste that must be managed and subsequently disposed of.

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### Phare 2003 Project

- EU technical expertise on the current radiological situation existing at Baita Bihor;
- identification of the most urgent upgrading measures to be undertaken at Baita Bihor;
- technical specifications and Tender Documents needed for the works component, including the equipment needed for the upgrading Baita Bihor repository;
- Concerning the completion of the PSAR, particular attention should be paid to the estimate of the frequency of fractures and fissures in the rocks surrounding the repository;
- procurement of equipment and instrumentation;
- construction, tests and operation.

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### Actions to be implemented

(within this project or later) in order to assure safe disposal operations, e.g.:

- construction of a light reception and storage building for the waste drums to be disposed of;
- replacement of the existing electrical and ventilation systems;
- replacement of the drainage system;
- waterproofing of the disposal and transport galleries;
- realisation of a modern physical protection system;
- optimisation of the backfilling operations in disposal chambers;
- improvement of radiation protection and dosimetry for workers assigned to disposal operations.

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### Results

- list of urgent upgrading measures to be implemented
- installation of the corresponding equipment and the construction works to upgrade the safe disposal operations
- completion of the PSAR
- licensing of the disposal facility

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